and measuring the luminescence radiation with the measuring device. Herron fails to disclose or suggest guiding luminescence radiation generated in an immediate proximity of a surface of a waveguiding layer to a measuring device after the luminescence radiation penetrates the waveguiding layer; and measuring the luminescence radiation with the measuring device, as recited in claim 1.

Herron discloses an apparatus for multi-analyte homogeneous fluoroimmunoassays. The apparatus includes a light source 100 operable to emit a light beam 102 to a biosensor 120 via a number of mirrors 104, 106, 108, 110 and a focusing lens 124. The biosensor has an optical substrate (waveguide) 122 with one end 124 positioned to receive the light beam 102. The waveguide 122 is of generally planar shape having two planar surfaces 200 and 201 spaced by a width 202. The apparatus also includes a light detection means 150 that includes a collection lens 152 positioned to collect emitted fluorescence from a plane parallel to and displaced from a surface of the waveguide 122. (See column 5, line 63 - column 6, line 54 and Figures 1 and 2).

In operation, the surface 200 of the optical substrate 122 is in contact with a sample solution 203. A plurality of capture modules 204 are immobilized on the surface 200 of the optical substrate 122. The sample solution 203 contains a number of analyte molecules 210 of a selected analyte and a plurality of tracer molecules 220. The capture molecules 204 are chosen to bind to a binding moiety present on each of the analyte molecules 210. The tracer molecules 220 are chosen to emit flourescent light in response to stimulation by light of an appropriate wavelength from the light source 100. The level of fluorescence emitted by the tracer molecules 220 and measured as evanescent light by the light detection means 150 is a measure of the amount of analyte bound to the capture molecules 204 and is thereby reflective of the concentration of analyte molecules 210 in the solution 203. (See column 7, line 57 - column 8, line 5; column 30, lines 50-55; and Figure 2).

Based on this description, it is apparent that Herron discloses that the flourescent light emitted by tracer molecules 220 is measured as evanescent light by the light detection means 150. This differs from claim 1 which recites guiding luminescence radiation generated in an immediate proximity of a surface of a waveguiding layer to a measuring device after the

luminescence radiation penetrates the waveguiding layer; and measuring the luminescence radiation with the measuring device. As a result, Herron fails to disclose or suggest the present invention as recited in claim 1.

As for Kraus, it is relied upon as disclosing a diffractive coupling. However, even if this contention is accurate, Kraus fails to disclose or suggest the features of claim 1 discussed above.

Claim 4 is patentable over the combination of Herron and Kraus for similar reasons as set forth above in support of claim 1. That is, claim 4, like claim 1, recites guiding a luminescence radiation generated in an immediate proximity of a surface of waveguiding layers of at least two waveguides to a measuring device after the luminescence radiation penetrates the waveguiding layer, and measuring the luminescence radiation with the measuring device, which features are not disclosed or suggested in the references.

Further, it would not have been obvious to combine diffractive coupling of Kraus with the apparatus of Herron. Herron discloses that the focusing lens 126 is used to couple the light beam 102 into the end 124 of the waveguide 122 and provides no disclosure of out-coupling the light beam 102. Further, the waveguide 122 is disclosed as being made from glass quartz or plastic and having a thickness 202 (See column 16, lines 16-31 and Figure 2). From this disclosure, it is apparent that the waveguide 122 is based on thick waveguide technology. Since diffractive couplings are not applicable in thick waveguide technology, it would not have been obvious to one of ordinary skill in the art to combine the diffractive coupling of Kraus with the waveguide 122 of Herron.

In the Remarks section of the final Office Action dated July 28, 2003, the Examiner states that "Herron discloses the use of a "non-evanescent" light source in column 30, line 52." Further, the Examiner indicates that the arguments filed in the Amendment of May 14, 2003 are not persuasive in light of this disclosure in Herron. However, it is noted that while this disclosure of Herron might be relevant to the arguments for independent claims 1 and 4 included in the Amendment of May 14, 2003, the arguments for independent claims 8 and 10 also included in the Amendment of May 14, 2003 were different than those associated with claims 1 and 4. Since the Examiner has not provided any comments that are relevant to the arguments

associated with claims 8 and 10, it appears that the Examiner failed to consider these arguments. As a result, these arguments are repeated below. The Examiner is respectfully requested to supply comments addressing these arguments in any response to this Request for Reconsideration.

Claim 8 is patentable over Herron, since claim 8 recites an apparatus having, in part, one of an electric energy source operable to generate an electric field, the electric energy source having electrodes, and an optical energy source operable to emit excitation radiation, wherein the electrodes of the electric energy source are located in direct contact with an analyte sample, and the excitation radiation of the optical energy source is directed directly onto the analyte sample at an inclined angle or a right angle, or a reservoir containing a chemical which excites a chemiluminescence in contact with the analyte sample. Herron fails to disclose or suggest either an electric energy source or an optical energy source as recited in claim 8.

As discussed above with respect to claim 1, Herron discloses a light source 100. The light source is further disclosed as being an argon laser, a laser diode or any other laser or high intensity light source. (See column 5, line 65 - column 6, line 7). Therefore, it is apparent that the light source 100 does not correspond to the electric energy source as recited in claim 8.

Further, Herron discloses that light emitted from the light source 100 is directed to an end 124 of the waveguide 122 on which analytes are in contact with. (See column 6, lines 16-31 and Figure 1). Since the light from the light source 100 is directed to the end 124 of the waveguide 122 instead being either directed directly onto the analyte at an inclined angle or a right angle, or onto a reservoir containing a chemical which excites a chemiluminescence in contact with the analyte sample, it is apparent that the light from the light source 100 also does not correspond to the optical energy source recited in claim 8.

As a result, Herron fails to disclose or suggest the present invention as recited in claim 8.

Again, the obviousness rejection indicates that Kraus discloses a diffractive coupling. However, Kraus also fails to provide any suggestion of the above-discussed features of claim 8.

Claim 10 is also patentable over Herron, since claim 10 recites a sensor platform having, in part, a tight sealing layer located on a waveguiding layer, the tight sealing layer having, at least

in a subregion of excitation radiation, a cutout having an open top or a closed top and connected to an inflow channel and outflow channel, for an analytical sample, the cutout having a depth at least corresponding to a depth of penetration of an evanescent field of luminescence light guided in an planar optical layer waveguide, wherein the tight sealing layer comprises a material which, at least on a bearing surface at least in the depth of penetration of the evanescent field of the luminescence light guided in the planar optical layer waveguide, is transparent to the luminescence light. Herron fails to disclose or suggest a tight sealing layer as recited in claim 10.

Herron discloses a biosensor 500 that has a waveguide 504 located between a side wall 512 with a number of wells 600, 602, 604 and 606 located therein and a side wall 511, a bottom wall 517 and a sealing rear wall 518. (See column 11, lines 15-42 and Figures 5A - 6). However, it is apparent that none of the walls correspond to the tight sealing layer recited in claim 10, since none of the walls are disclosed or suggested as comprising a material which, at least on a bearing surface at least in a depth of penetration of an evanescent field of luminescence light guided in the waveguide 504, is transparent to the luminescence light. As a result, Herron fails to disclose or suggest the present invention as recited in claim 10. Further, Kraus also fails to provide any suggestion of the above-discussed feature of claim 10.

Because of the above mentioned distinctions, it is believed clear that claims 1-10 are allowable over Herron and Kraus. Furthermore, it is submitted that the distinctions are such that a person having ordinary skill in the art at the time of invention would not have been motivated to make any combination of the references of record in such a manner as to result in, or otherwise render obvious, the present invention as recited in claims 1-10. Therefore, it is submitted that claims 1-10 are clearly allowable over the prior art of record.

In view of the above remarks, it is submitted that the present application is now in condition for allowance. The Examiner is invited to contact the undersigned by telephone if it is felt that there are issues remaining which must be resolved before allowance of the application.

Respectfully submitted,

Gerd MAROWSKY et al.

By: David M. Ovedovitz

David M. Ovedovitz
Registration No. 45,336
Attorney for Applicants

DMO/jmj
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
October 28, 2003